# INDEX

Acidity—
a contribution to the knowledge of soil,
436-437

Easily Soluble Calcium of the Soil in Relation to, and Returns from Liming (paper), F. L. Duley, 213-228

relation of, to lime, 465-466

Some General Conceptions on, and the Rôle Played by it in Several Processes (abs.), D. J. Hissink, 435

The, of the Soil (abs.), D. J. Hissink and Jac. van der Spek, 435-436.

Aeration, The Effect of, upon the Development of Barley in a Heavy Clay Soil (paper), R. V. Allison, 97-106

Adsorption and Absorption of Bases by Soils (paper), Carleton P. Jones, 255-273

Absorption-

effect of hydrogen-ion concentration on, in soil, 414-420

phenomena of, in alkali soil, 395-409

Alfalfa meal, decomposition of, in soil, 298-299, 301-302

Alinit, the use of, for soil inoculation, 31

Alkali Soil Investigations: I. A Consideration of Some Colloidal Phenomena (paper), J. S. Joffe and H. C. Mc-Lean, 395-409

Allison, R. V. (paper), The Effect of Aeration upon the Development of Barley in a Heavy Clay Soil, 97-106.

Alum, effect of, on colloids in alkali soils, 401
Ammonification of dicyandiamid and guanyl sulfate, 497

Ammonium sulfate-

its effect on calcium leachings, 252-254 nitrogen recovery with, 326-330 oxidation of, by microorganisms, 58-63

"Auximones," and the Growth of the Green Plant, (paper), Emery M. Roller and Norman Ashwell Clark, 193–198

Available-

methods of determining, phosphorus and potash, 459-461

State (paper), J. Alan Murray, 359-371

Azotobacter-

effect of reaction on, in soils, 183-190 influence of, on crops, 34-35 the relation of, to phosphorus, 380

Bacteria—(see also microörganisms) cellulose, culture media for, 33

Bacillus radicicola, historical review of its application as a manuring agent in soils, 19-21

Bacteriophage, the Occurrence of a, in the Nodules of Leguminous Plants (abs.) F. C. Gerretsen, A. Gryns, J. Sack and N. L. Sönngen, 434

Bases, effect of H-ion concentration on exchange of, in soil, 414-420

Blair, A. W. and Prince, A. L. (paper), Influence of Varying Ratios of Phosphoric Acid and Potash on Crop Yield and Nitrogen Recovery, 327-331

(paper), Preliminary Note on the Distribution of Nitrates in Soil under Corn Culture, 323-326

Blood, decomposition of, in soil, 298-299, 377

Bouyoucos, George John (paper), Effect of Ignition at Various Temperatures upon Certain Physical Properties of Soils, 135-139

Bradfield Richard (paper), The Importance of Hydrogen-Ion Concentration Control in Physico-Chemical Studies of Heavy Soils, 411–422

Brockmann, Chr., and Hissink, D. J. (abs.) The Black Clay of Thesinge (in the province of Groningen, Holland), 434

Calcium-

content of soil in relation to absolute reaction, 181-191

easily soluble, of the soil in relation to acidity, 213-227

Calcium Carbonate-

absorption and adsorption of, in soils, 260-273, 414-420

The Loss of, in Drainage Water as Affected by Different Chemical Fertilizers (paper), F. W. Morse, 240-254

Carbon dioxide-

as a measure of microbiological activities in soil, 293-312

as an index of soil fertility, 141-161

excretion of, by various plants, 231-238
Production of Plant Roots as a Factor
in the Feeding Power of Plants
(paper), F. W. Parker, 229-247

Cellulose-

decomposition of, in soil, 298-299, 307 effect of, on various groups of microorganisms, 373-378

The Effect of Different Kinds of Wood Pulp, on Plant Growth (paper), J. A. Viljoen and E. B. Fred, 199–211

Clay, The Black, of Thesinge (in the province of Groningen, Holland) (abs.), Chr. Brockmann, and D. J. Hissink, 434

Clark, Norman Ashwell, and Roller, Emery M. (paper), "Auximones" and the Growth of the Green Plant, 193-198

coagulation of, 400–408 determination of charge on, 403 presence of, in soils, 404–405

Crops, Report on Investigations on the Causes of Poor Appearance of, in Zealand (abs.), D. J. Hissink and K. Zylstra

Dachnowski, Alfred P. (paper), The Stratigraphic Study of Peat Deposits, 107-133

Deflocculation, effect of H-ion concentration on, in soil, 411-414

Denitrification in tropical soils, 433

Dextrose, decomposition of, in soil, 146, 298-299

Dicyandiamid, The action of, and guanyl urea sulfate on plant growth, 487-500

Duley, F. L. (paper), Easily Soluble Calcium of the Soil in Relation to Acidity and Returns from Liming, 213–228

Fertility-

Microbiological Analysis as an Index of Soil, VII. Carbon Dioxide Evolution (paper), Selman A. Waksman and R. L. Starkey, 141–161

Microbiological Analysis as an Index of Soil, VIII. Decomposition of Cellulose (paper), Selman A. Waksman and O. Heukelekian, 275-291

relation of, and calcium content to the use of lime in the field, 220-229

Fertilizers-

effect of, on nitrification, 337-340

The Effect of Several Mineral, upon the Nodulation of Virginia Soy Beans (paper), Alfred T. Perkins, 439-447

the Influence of Acid and Alkaline, on the plots of Spitzberger (abs.), J. Neidig and C. Meyer, 437

Flocculation, effect of hydrogen-ion concentration on, in soil, 411-414

Fred, E. B., Viljoen, J. A. and (paper), The Effect of Different Kinds of Wood and of Wood Pulp Cellulose on Plant Growth, 199-211

Fungous growth, decomposition of, in soil, 298-299

Gainey, P. L., Swanson, C. O., and Latshaw, W. L. (paper), The Calcium Content of Soil in Relation to Absolute Reaction, 181-191

Gerretsen, F. C., Gryns, A. Sack, J., and Söhngen, N. L. (abs.), On the Occurrence of a Bacteriophage in the Nodules of the Leguminous Plants, 434

Gowda, R. Nagan (paper), Nitrates and Nitrification in Field Soil, 333-342

(paper), Oxidation of Ammonia and Nitrites by Microorganisms under Different Conditions, 57-64

Gryns, A., Gerretsen, F. C., Sack, J., and Söhngen, N. L. (abs.), On the Occurrence of a Bacteriophage in the Nodules of Leguminous Plants, 434

Guanyl urea sulfate, the action of dicyandiamid and, on plant growth, 487-500.

Gypsum, effect of, on solubility of phosphates, 56.

Hemmerling, V. V. (abs.), The Characterization of the Main Soil Types from Data of Absorbed Bases, 429

Heat of wetting, effect of ignition on, of various soils, 137-139

Heukelekian, O., Waksman, Selman A., and (paper), Microbiological Analysis of Soil as an Index of Soil Fertility: VIII. Decomposition of Cellulose, 275– 291

- Hissink, D. J. (abs.), A simple and Quick Method for Determining Soil Acidity, 434-435
  - (abs.) Studies on Samples of Soil and Dredged Mud from the Polders and Lakes East of the Utrecht Vecht in Connection with the Draining Plans of these Lakes, 434.
- and Van Der Spek, Jac. (abs.), The Acidity of the Soil, 435-436
- Zylstra, K. (abs.), Report on Investigation on the Causes of Poor Appearance of Some Crops in Zeeland, 434
- Histograms, average textural composition of the thirteen soil divisions of the U. S. as represented by, 469-485
- Hudig, J., and Meyer C. (abs.), The Influence of Acid and Alkaline Fertilizers on the Growth of Crops, 437
- Hudig, J., Quanjer, H. M., and (abs.) The Potato Scab and Its Relation to Climate and Soil, 438

### Humus-

- the relation of, to soil problems, 114-115 Hydrocyanic acid content of sorghum as an indicator of available nitrogen, 315-320
- Hydrogen-ion concentration-

## effect of-

- on nitrification, 60.
- calcium on, in soils, 183-191
- on coagulation of colloids in alkali soils, 401-404
- Importance of, Control in Physico-Chemical Studies of Heavy Soils (paper), Richard Bradfield, 411-422
- of soils and percolates at different stages in the development of barley plants, 103

### Ionization-

effect of, on absorption of salts by plants, 366

### Irrigation-

- The Absorbing Power of Soils and the Principle of Automatic Self-, of Soils (abs.), B. G. Kornev, 428-420
- Jennings, D. S. (paper), A Statistical Study of the Distribution of Soil Material in the United States According to the Size of Its Particles, 469-485
- Joffe, J. S. and McLean, H. C. (paper), Alkali Soil Investigations: I. A Con-

- sideration of some Colloidal Phenomena, 395-409.
- Jones, Carleton P. (paper), Adsorption and Absorption of Bases by Soils, 255-273
- Karunakar, P. D., Waksman, Selman A., and (paper), Microbiological Analysis of Soil as an Index of Soil Fertility: IX. Nitrogen Fixation and Mannite Decomposition, 379–393.
- Katshinsky, G. A. (abs.), The Root System of Grasses in Soils of the Podzol Type, 429
- Kornev, B. G. (abs.), The Absorbing Power of Soils and the Principle of Automatic Self-Irrigation of Soils, 428– 429
- Krasiuk, A. A. (abs.), The Differentiation of Podzol Soils by Morphological Indices, 429-430
- Latshaw, W. L., Swanson, C. O., Gainey, P. L., and (paper), The Calcium Content of Soil in Relation to Absolute Reaction, 181-191
- Lebediev, A. F. (abs.), On the Moisture Properties of the Soil, 423-426
- Lichtenberg, J. F. (abs.), Soil Water Level, Capillarity and Evaporation, 438

# Lime-

- effect of, on availability of phosphates,
- 465-466 effect of, on nodule formation, 26
- effect of, upon nodulation, 445-446, 452-454

### Makrinoff, I. A .-

- (paper), Experiments with Bacterial Soil Fertilizing Preparations, 19-30
- (paper), Is it Possible to Make a Bacterial Soil Preparation for Non-Legume Crops? 31-38
- Manure, effect of, on decomposition of peat,
- Maschhaupt, J. G. (abs.), The Influence of Soil Type and Fertilization on the Nitrogen and Ash Contents of Our Farm Crops, 438
- MacIntire, W. H., and Shaw, W. M. (paper), The Effect of Soil Suspensions upon the Solubility of the Sulfate Radical in the System Ca(OH)<sub>2</sub>—CaSO<sub>4</sub>—H<sub>2</sub>O, 65-89
- McGeorge, W. T. (paper), The Influence of Silica, Lime and Soil Reaction upon the Availability of Phosphates in Highly Ferruginous Soils, 463–468

(paper), The Value of Soil Analysis when Limited to an Intensive Single Cropping System, 457-462

McGuinn, Albert, F. (paper), The Action of Dicyandiamid and Guanyl Urea Sulfate on Plant Growth, 487-500

McLean, H. C., Joffe, J. S., and (paper), Alkali Soil Investigations I. A Consideration of Some Colloidal Phenomena, 395-409

Meyer, C., Hudig, J., and (abs.), The Influence of Acid and Alkaline Fertilizers on the Growth of Crops. 437

Microörganisms-

as effective agents in decomposition of peat, 115

effect of dicyandiamid and guanyl urea sulfate on, 495-497

effect of organic matter on development of, in soil, 373-378

Oxidation of Ammonia and Nitrites by, under Different Conditions (paper), R. Nagan Gowda, 57-64

Mitscherlich, formula of, for determining effect of various increments or productivity, 359-360

Moisture, as a factor in peat decomposition, 115

Morse, F. W. (paper), The Loss of Calcium Carbonate in Drainage Water as Affected by Different Chemical Fertilizers, 249-254

Muck, the relation of, to soil problems, 114 Murray, J. Alan (paper), The Available State, 359-371

#### Nitrates-

and Nitrification in Field Soils (paper), R. Nagan Gowda, 333-342

as an index of soil productiveness, 333-342 effect of, on hydrocyanic acid produced in sorghum, 315-320

effect of, on nodule formation, 26

Investigations on, and Denitrification in Tropical Soils (abs.), F.C. Gerretsen, 433 Preliminary Note on the Distribution of, in Soil under Corn Culture (paper), A. W. Blair and A. L. Prince, 323-326

quantitative determination of, 163-179 reduction of, in the soil by cellulose and sawdust, 204

The Quantitative Determination of, in Soil (paper), D. J. R. Van Wijk, 164-179 Nitric Acid, the use of, in extracting soil phosphates, 40-41

Nitrification-

effect of dicyandiamid and guanyl urea sulfate on, 495

effect of hydrogen-ion concentration of media on, 60

effect of sawdust on, 205 in field soils, 333-342

Nitrites, oxidation of, by microörganisms, 58 Nitrogen—

effect of, upon nodulation 446

Fixation and Mannite Decomposition, Microbiological Analysis of Soil as an Index of Soil Fertility, IX (paper), Selman A. Waksman and P. D. Karunakar, 379-393

Influence of Varying Ratios of Phosphoric Acid and Potash on Crop Yield and, Recovery (paper), A. W. Blair, A. L. Prince, 327-331.

recovery of, as influenced by various fertilizers, 326-330

Nodulation, A Note on the, Soy Beans (paper), Alfred T. Perkins, 449-456

# Organic matter-

decomposition of, 293-312

effect of, on physical condition of soil, 199
Influence of, upon the Development of
Fungi, Actinomycetes and Bacteria
in the Soil (paper), Selman A. Waksman and Robert L. Starkey, 373-378

Parker, F. W. (paper), Carbon Dioxide Production of Plant Roots as a Factor in the Feeding Power of Plants, 229-247

Peat, The Stratigraphic Study of, Deposits (paper), Alfred P. Dachnowski, 107-133

Perkins, Alfred T. (paper), A note on the Nodulation of Soy Beans, 449-456

(paper), The Effect of Several Mineral Fertilizers upon the Nodulation of Virginia Soy Beans, 439-447

## Phosphates-

effect of-

on nitrification, 337-340

on decomposition of mannite, 381

on nitrogen fixation, 386

on nodulation, 441-443, 449-452

silica on assimilation of, by sugar cane, 465

- The Influence of Silica, Lime and Soil Reaction upon the Availability of, in Highly Ferruginous Soils (paper), W. T. McGeorge, 463-468
- Phosphorus
  - agents dissolving, 459-460
  - available state of, 359-371
  - in relation to Azotobacter, 380-381
  - influence of, on crop yield and nitrogen recovery, 327-331
  - Relative Availability of the, of Raw Rock and Acid Phosphate in Soils (paper), M. I. Wolkoff, 39-56
- Pinckney, R. M. (paper), Sorghum as an Indicator of Available Soil-Nitrogen, 315-321
- Plant-
  - "Auximones" and the growth of green, 193-198
  - composition of, as affected by aspiration, 238-239
  - growth, the effect of different kinds of wood and wood pulp cellulose on, 199-211
    - The Action of Dicyandiamid and Guanyl Urea Sulfate on (paper), Albert F. McGuinn, 487-500
- Plant roots
  - carbon dioxide production of, as a factor in the feeding power of plants, 229-247
- amount of CO2 given off by, 241-243
- Post, Arthur H. (paper), Soil Availability as Determined by Statistical Methods, 343-357
- Potash
  - agents dissolving, 460-461
  - effect of, on nitrification, 337-340
  - effect of, upon nodulation, 443-444
  - influence of varying ratios of, on crop yields and nitrogen recovery, 327-331
- Potassium-
- Replacement of Soil (paper), S. C. Vandecaveye, 91-96.
- absorbtion of, in soil, 416-418
- Prince, A. L., Blair, A. W., and (paper), Influence of Varying Ratios of Phosphoric Acid and Potash on Crop Yield and Nitrogen Recovery, 327-331
- Prince, A. L., Blair, A. W., and (paper), Preliminary Note on the Distribution of Nitrates in Soil under Corn Culture, 323-326
- Quanjer, H. M., and Hudig, J. (abs.), The

- Potato Scab in Its Relation to Climate and Soil, 438
- Reaction, The calcium content of soil in relation to absolute, 181-191
- Roller, Emery M., Clark, Norman Ashwell, and (paper), "Auximones" and the Growth of the Green Plant, 193-198
- Sack, J., Gerretsen, F. C., Gryns, A., and Söhngen, N. L. (abs.), On the Occurrence of Bacteriophage in the Nodules of Leguminous Plants, 434
- Schweitzer reagent, preparation of, for cellulose determination, 277-278
- Shaw, W. M., MacIntire, W. H., and (paper), The Effect of Soil Suspensions upon the Solubility of the Sulfate Radical in the System Ca(OH)<sub>2</sub>-CaSO<sub>4</sub>-H<sub>2</sub>O, 65-89
- Silica, effect of, upon availability of phosphates, 463–465
- Sodium nitrate, effect of, on calcium leachings, 251-254
- Söhngen, N. L., Gerretsen, F. C., Gryns, A., Sack, J., and (abs.), On the Occurrence of a Bacteriophage in the Nodules of Leguminous Plants, 434
- Soil
  - acidity of the, 435-436
  - Acidity, a Simple and Quick Method for determining (abs.), D. J. Hissink, 434
- air, percentage of carbon dioxide in, 236

  Availability as Determined by Statistical

  Methods (paper), Arthur H. Post
- 343-357
  A Statistical Study of the Distribution of,
  Material in the United States According to the Size of its Particles
- (paper), D. S. Jennings, 469-485
  Bacterial Fertilizing Preparations, Experiments with (paper), I. A. Makrinoff, 19-30
- chemistry, investigation in, in Germany (abs.), 431-433
- easily soluble calcium of the, in relation to acidity and distribution of nitrates in, 323-326
- inoculation of, in farm practice, 25–27
- Is It Possible to Make a, Bacterial Preparation for Non-Legume Crops? (paper), I. A. Makrinoff, 31-38
- microbiological analysis of, as an index of soil fertility, 141-161, 275 291, 379-393

Nitrogen, Sorghum as an Indicator of Available (paper), R. M. Pinckney, 315-321

On the Moisture Properties of the (abs.), A. F. Lebediev, 423-426

physics, investigations in, in Germany (abs.), 430-431

returns from liming, 213-228

sampling, errors involved in, 343-357

stability of dicyandiamid and guanyl urea sulfate in, 497

Studies on Samples of, and Dredged Mud from the Polders and lakes East of the Utrechtse Vecht in Connection with the Draining Plans of these Lakes (abs.), D. J. Hissink, 434

surface tension phenomena in, 397-398

The Action of Solutions of Neutral Salts on, A Contribution to the Knowledge of Soil Acidity (abs.), Jac. Van der Spek, 436-437

The Calcium Content of, in Relation to Absolute Reaction (paper), C. O. Swanson, P. L. Gainey, and W. L. Latshaw, 181-191

The Characterization of the Main, Types from Data of Absorbed Bases (abs.), V. V. Hemmerling

The Potato Scab in Its Relation to Climate and (abs.), H. M. Quanjer and J. Hudig, 438

the quantitative determination of nitrates in. 163-179

The Value of, Analysis when Limited to an Intensive Single Cropping System (paper), W. T. McGeorge, 457–462

Type, the Influence of, and Fertilization on the Nitrogen and Ash Contents of Our Farm Crops (abs.), J. G. Maschhaupt, 438

Water Level, Capillarity and Evaporation (abs.), J. F. Lichtenberg, 438

Soils-

adsorption and absorption of bases in, 255-273

aqueous vapor pressure of, 1-18, 397-398

decomposition of organic matter by, of different fertility, 296

importance of H-ion concentration control in, 411-422

Origin of Alkali (abs.), D. G. Vilensky, 426-427 On the Amelioration of Salinized (abs.), D. G. Vilensky, 427-428

The Differentiation of Podzol, by Morphological Indices (abs.), A. A. Krasiuk, 429-430

The Effect of Ignition at Various Temperatures upon Certain Physical Properties of (paper), George John Bouyoucos, 135-139

The Root System of Grasses in, of the Podzol type (abs.), G. A. Katshinsky,

Starkey, Robert, L. (paper), Some Observations on the Decomposition of Organic Matter in Soils, 293-314

Starkey, Robert L., Waksman, Selman A., and (paper), Influence of Organic Matter upon the Development of Fungi, Actinomycetes and Bacteria in the Soil, 373-378

Starkey, Robert, L., Waksman, Selman, A., and (paper), Microbiological Analysis of Soil as an Index of Soil Fertility: VII. Carbon Dioxide Evolution, 141-161

Soybeans, the effect of several mineral fertilizers upon the nodulation of Virginia, 439-447

Statistics-

application of, to soil availability studies, 343-357

use of, in studying size of soil material, 469-485

Sterilization, effect of, on solubility of potassium, 94

Straw, decomposition of, in soil, 298-299, 301-302, 308, 375

Sulfate-

The Effect of Soil Suspensions upon the Solubility of the, Radical in the System Ca(OH)<sub>2</sub>—CaSO<sub>4</sub>—H<sub>2</sub>O (paper), W. H. MacIntire and W. M. Shaw, 65–89

retention of, in soils, 69-89

Sulfur, effect of oxidation products of, on soil colloids, 398-408

Sulfuric acid, effect of, on coagulation of colloids in soil, 401-404

Swanson, C. O., Gainey, P. L., and Latshaw, W. L. (paper), The Calcium Content of Soil in Relation to Absolute Reaction, 181-191 INDEX 507

Thomas, Moyer, D. (paper), Aqueous Vapor
Pressure of Soils: II. Studies in Dry
Soils, 1-18

Toxicity, effect of essential elements upon, to nodulation induced by non-essential elements, 454-456

Vapor Pressure of Soils, Aqueous: II. Studies in Dry Soils (paper), Moyer D. Thomas, 1-18

of alkali soil extracts, method of determination, 405–406

Vandecaveye, S. C. (paper), The Replacement of Soil Potassium, 91-96

Van der Spek, Jac. (abs.), The Action of Solutions of Neutral Salts on soil, A contribution to the Knowledge of Soil Acidity, 436-437

Van der Spek, Jac., Hissink, D. J., and (abs.), The Acidity of the Soil, 435-436

Van Wijk, D. J. R. (paper), The Quantitative Determination of Nitrates in Soil, 163-179

Vilensky, D. G. (abs.),

On the Amelioration of the Salinized Soils, 427-428

Origin of Alkali Soils, 426-427

Viljoen, J. A., and Fred, E. B. (paper), The Effect of Different kinds of Wood and of Wood Pulp Cellulose on Plant Growth, 199-211.

Waksman, Selman A., and Heukelekian, O. (paper), Microbiological Analysis of Soil as an Index of Soil Fertility: VIII. Decomposition of Cellulose, 275-291

Waksman, Selman A., and Karunaker, P. D. (paper), Microbiological Analysis of Soil as an Index of Soil Fertility. IX. Nitrogen Fixation and Mannite Decomposition, 379–393

Waksman, Selman A., and Starkey, Robert L. (paper), Influence of Organic Matter upon the Development of Fungi, Actinomycetes and Bacteria in the Soil, 373-378

Waksman, Selman A., and Starkey, Robert L. (paper), Microbiological Analysis of Soil as an Index of Soil Fertility: VII. Carbon Dioxide Evolution, 141-161

Wolkoff, M. I. (paper), Relative Availability of the Phosphorus of Raw Rock and Acid Phosphate in Soils, 39–56

Zylstra, K., Hissink, D. J., and (abs.), Report on the Investigation on the Causes of the Poor Appearance of Some Crops in Zeeland, 434